REMARKS

Claims 14-18, 24-26, 28-29, and 31-33 are currently amended. Claims 14-33 are presently pending. The amendments to the claims are fully supported by the specification. In general, the claims were amended to replace the phrase "primary explant" with the phrase "primary regeneration tissue, comprising embryogenic cells" for clarification purposes only and are supported by the specification at, for example, page 3, lines 22-23 and page 9, lines 5-8. Claims 14, 29, and 32 were amended to add the step of culturing the regeneration tissue on a multiplication medium for a time sufficient to maintain a stable proliferation of primary regeneration tissue comprising embryogenic cells. This amendment is supported by the original specification, for example, at page 9, lines 5-8. Claim 14, was further amended for clarification purpose to add the step of culturing the primary regeneration tissue on a multiplication medium for a time sufficient to maintain a stable proliferation of the primary regeneration tissue. This amendment is supported by the specification at, for example, page 9, lines 5-9. No new matter has been added by the amendments made herein.

Claims 14-33 were rejected under 35 U.S.C. §112, second paragraph, for lack for the reasons set forth on pages 2-4 of the Office Action.

In response to the Examiner's many questions regarding the present invention, Applicants would be more than happy to answer questions that the Examiner has during an in-person interview at the Examiner's convenience. In the mean time, Applicants will briefly explain the background of the invention and the meaning of the terms. Primary regeneration tissue is tissue that gives rise to somatic embryos; the regeneration tissue comprises embryogenic cells. Once the tissue produces mature somatic embryos, it is no longer a primary regeneration tissue. One skilled in the art would understand the meaning of the term "primary regeneration tissue" accordingly.

As further background, the prior art teaches the cryo-preservation of zygotic and somatic embryos and calli, but none of the prior art teaches or suggest the culturing of a primary regeneration tissue, *i.e.*, calli containing embryogenic cells, cells that give rise to somatic embryos. It was the present Inventors that discovered that by culturing primary regeneration tissue instead of somatic embryos or general callus tissue as taught by the prior art resulted in higher regeneration rates and that lower occurrence of somaclonal variations.

Claim 14, 24, 25, 31 and 32 has now been amended. The term "primary explant" has been replaced by the term" primary regenerating tissue comprising embryogenic cells." In view of this amendment and the explanation above, the Examiner questions should be resolved.

Furthermore, claim 25 has been amended to clarify that it is the "prefreezing step" of claim 24 that comprises the two steps. And Claim 24 and 32 have been amended to delete reference to the dry weight.

In view of these amendments and statements above, Applicants respectfully request that the indefiniteness rejection be withdrawn.

Claims 24-30 and 32 were rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not described in the specification for the reasons set forth on pages 4-9 of the Office Action.

Independent claim 24 and dependent claim 32 has been amended to delete the limitation of "at least 28 g/100g dry weight." Therefore, Applicants respectfully request that the 35 U.S.C. §112, first paragraph rejection be withdrawn.

Claims 14, 16-19, 31 and 33 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,143,563 to Peterson ("Peterson") for the reasons set forth on pages 6-7 of the action.

As stated by the Examiner, Peterson is directed to a process for the cryopreservation of a plant explant material including plant callus. Peterson does not teach or suggest a process of cryopreserving primary regeneration tissue comprising embryogenic cells as required by the present claims.

At page 9, lines 5-8 of the original filed application, it is disclosed that upon the observance of globular stage cells, the plant tissue on the induction medium has now become a "primary regeneration tissue." The specification then goes on to teach the step of cryofreezing the "primary regeneration tissue." As Peterson does not teach this step, it cannot anticipate the present claims. As indicated above, it was Applicants that surprisingly discovered that by cryofreezing the "primary regeneration tissue" instead of regular calli, zygotic embryos, or somatic embryos that the regeneration after cryofreezing was greatly increased while the somaclonal variation was greatly decreased.

In view of this, Applicants ask that the anticipation rejection over Peterson patent be withdrawn.

Claims 14-20, 22, 31 and 33 were rejected under 35 U.S.C. §102(b) as being anticipated by Pence for the reasons set forth on pages 7-9 of the action.

Pence is directed to the cryopreservation of zygotic embryos. Pence also fails to mention or teach the cryopreservation of primary regeneration tissue comprising embryogenic cells.

As extensively explained above, Applicants invention is directed to a process for the cryopreservation of a primary regeneration tissue, not zygotic embryos.

Therefore, this rejection should also be withdrawn.

Claims 14-33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson taken with Pence, U.S. Patent No. 5,943,821 to Ducas *et al.* ("Ducas") and U.S. Patent No. 5,922,929 to Zimmerman *et al.* ("Zimmerman) for the reasons set forth on pages 9-12 of the action.

As explained above, Peterson does not teach or suggest a process of cryopreserving primary regeneration tissue comprising embryogenic cells as required by the claims. Pence fails to remedy the deficiencies of Peterson teaching the cryopreservation of zygotic cells. Ducas and Zimmerman are relied upon by the Examiner to demonstrate that plant species such as *Coffea canephora* and *Daucus carota* is capable of forming a callus culture and make no reference at all to primary regeneration tissue comprising embryogenic cells and therefore also do not remedy the deficiencies of Peterson. As Peterson does not teach alone or in combination with Pence, Ducas or Zimmerman the presently claimed invention, this rejection should be withdrawn.

Claims 14-16, 20, 21, 24, 25, 27, 28, 31 and 33 were rejected under 35 U.S.C. §102(b) as being anticipated by Hatanaka *et al.* [AP] for the reasons set forth on pages 12-13 of the action.

The crux of Applicants' invention is their discovery that by cryofreezing primary regeneration tissue instead of regular calli, zygotic embryos or somatic embryos, the regeneration success is greatly increased while minimizing the somaclonal variation associated with the prior art methods.

Hatanaka *et al.* teaches the cryo-preservation of somatic embryos. Hatanaka *et al.* also fails to mention or suggest the step of Applicants' presently claimed invention of cryofreezing primary regeneration tissue comprising embryogenic cells not does Hatanaka teach the step of culturing the primary regenerating tissue on a multiplication medium. Hatanaka, therefore cannot anticipate the presently pending claims.

Claims 14, 15, 18-20, 23, 31 and 33 were rejected under 35 U.S.C. §102(b) as being anticipated by Lecouteux *et al.* [AQ] for the reasons set forth on pages 13-15 of the action.

Lecouteux *et al.* is directed to the cryo-preservation of carrot somatic embryos having the typical drawbacks associated with the prior art techniques. There is no motivation or disclosure in Lecouteux *et al.* to lead one skilled in the art to Applicants' presently claimed

invention with its advantageous as discussed above. Therefore, Lecouteux also does not anticipate Applicants presently claimed invention and this rejection should be removed.

Claims 14-33 were rejected under 35 U.S.C. §103(a) as being obvious over Hatanaka *et al.* [AP] in view of Tessereau *et al.* [AR], Pence *et al.* [U], Lecouteux *et al.* [AQ], and Abdelnour-Esquivel *et al.* [AO] for the reasons set forth on pages 15-17 of the action.

As discussed above Hatanaka *et al.* teaches cryo-preservation of somatic embryos and does not teach or suggest the step of cryofreezing the plant tissue prior to the structural induction of somatic embryos. Tessereau *et al.* [AR], Pence *et al.* [U], Lecouteux *et al.* [AQ], and Abdelnour-Esquivel *et al.* [AO] do nothing to remedy these deficiencies, each teaching the cryo-preservation of somatic or zygotic embryos.

Therefore, none of the references together or alone teach or suggest a cryopreservation process of a primary regeneration tissue comprising embryogenic cells, nor the unexpected advantages associated with it. Applicants' invention is not anticipated or made obvious by the cited references. Applicants respectfully request that all anticipation and obviousness rejections be withdrawn for the reasons stated above.

In view of the foregoing remarks and amendments it is believed that the entire application is now in condition for allowance. Should any issues remain the Applicants would like to request an in-person interview to resolve them. Please feel free to call Allan Fanucci at (212) 294-3311 or Rodney Fuller at (202) 371-5838 if you have any questions to expedite the allowance of all the claims in this application.

Respectfully submitted,

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